1030-05-80   **Eric Fusy*** (`eric.fusy@inria.fr`), Simon Fraser University, Dept. Mathematics, 8888 University Drive, Burnaby, BC, Vancouver, V5A 1S6, Canada, and **Philippe Flajolet**, **Xavier Gourdon**, **Daniel Panario** and **Nicolas Pouyanne**. *A Hybrid of Darboux's Method and Singularity Analysis in Combinatorial Asymptotics.*

In analytic combinatorics, there are several methods to derive asymptotic estimates, which are applied in different contexts. In general, singularity analysis works fine when the generating function exhibits a finite number of dominant singularities. When it is not the case, Darboux's method can be used provided the generating function is smooth enough. We propose here a general method that combines both frameworks. The idea is to split the generating function into two factors; the first factor contains the most dominant singularities and is treated by singularity analysis, the second factor has the same singular points as the original function, but is now smooth enough to apply Darboux's method. We describe how to combine the effects of the two factors in order to get the global asymptotic estimate, and illustrate the method on several examples related to permutations, trees, and polynomial. (joint work with Philippe Flajolet, Xavier Gourdon, Daniel Panario, and Nicolas Pouyanne (Received July 19, 2007)